1: Coon E-5 (1926-1927) 1931 MX3 Rif MX3

delta. The course of the Ghis slants southwestward from Targuist, while the Nekor flows directly northward through sharp canyons from the mountain of Kuin in Gzennaya, to separate, farther along, Temsaman and Beni Tuzin from Beni Urriaghel. On the other side of the promontory of Temsaman empties the Amkaran, or Wed el Kebir, which commences a short distance away in the mountains of Beni Tuzin. Next to the Amkaran lies an unimportant stream called the Tasagin, coming down from the Dhar O Baran in Beni Ulishk. Beyond this there are none but the important arteries of the Kert and the Muluya, the former of which originates in Gzennaya, the seeming umbilicus of the Rif, and the latter of which flows northward from distant Tafilelt, where its head lies near that of the Draa, a lengthy watercourse emptying into the Atlantic nearly opposite the Canary Islands.

Such is the catalogue of rivers, the waters of which are jealously guarded and conserved, and which have been the cause of many of the local wars in the Rif.

The mountains of the Rif are supposed to be fabulously rich in minerals, including coal, iron, gold, and petroleum. None of these, however, have been extracted by the present inhabitants of the country, and hence they do not concern us here. Suspicion engendered by the presence of the minerals does more to hamper travel and research in the Rif than all other factors combined.

VEGETATION

It is too early in the course of Riffian research to give a complete list of botanical species from that country; no systematic botanist, as far as I know, has published any description of its flora. It will therefore have to suffice in this volume to present merely a very fragmentary roster of some of the more noticeable wild trees and bushes, such as readily meet the eye of the traveler, with local names and tentative identifications, made by observation and by analogy with the rest of North Africa.

Conifers

taidha, a tall, straight-growing conifer, with a large globular cone. This tree is much prized for house-building material.

taidha temjda, a similar tree, relatively stunted, with thick, wide branches. The *taidha* is found on the upper slopes of mountains; the *taidha temjda* grows on the mountain-tops and in the passes, where it is exposed to the elements: hence both may belong to the same species. (Plate I shows examples of both.)

Justinard calls the *taidha* a pine.[1] Hanoteau and Letourneau list for Algeria four species of terebinths; *Pistacia terebinthus L.*, *P. Atlantica Desf.*, *P. Lentiscus L.*, and *Rhus pentaphylla Desf.*[2]

takka, another conifer, with a small, compact cone. The wood of this tree is used in making tar. (Perhaps its name is related to the Ntifa word for terebinth.[3]) Justinard calls this a juniper.[4]

afezaz, the scrub juniper (not to be confused with *afesas*). Laoust postulates that the Berber root *zz* indicates the idea of spines or thorns, and cites other words, in Berber dialects, which contain this root and mean juniper.[5]

[1] Commandant Justinard, *Manuel de Berbère Marocain (Dialecte Rifain)*, p. 48.
[2] A. Hanoteau and A. Letourneau, *La Kabylie*, vol. 1, pp. 82–83.
[3] E. Laoust, *Mots et Choses Berbères*, p. 487. [4] Page 131. [5] Page 523.

1: Coon E-5 (1926-1927) 1931 MX3 Rif MX3

137 *riarz*, a cedar, growing very tall and straight. Its sweet-smelling wood is valued by carpenters and cabinet-makers.

[314] *amerzi*, another cedar, with very volatile reddish wood. Its pitch and resin are used as medicine.

rkanus, a similar tree, considered by the Riffians to be the female of the *amerzi*.

The cedars, generally known under the name of *thuya*, or *arbor vitæ*, form the characteristic coniferous vegetation of North Africa.[1]

Other Trees

[262] *rbejuth*, an evergreen oak, with edible acorns.

tashta, another species of oak, with inedible acorns.

rbejuth n yirif, the so-called pig-oak. Its acorns are eaten by wild boars, but not by men on account of their bitter taste. Justinard lists as oak *adren*, calling *abedjoud* the acorn.[2] The latter word is derived from the Arabic *el-bellut*, the difference in renderings being due, aside from different techniques in transcription, to my retention of the *r*, the berberisation of the Arabic definite article, in the Riffian dialects. I have always heard it pronounced with the *r*. Hanoteau and Letourneau [3] identify five oaks in Algeria: *Quercus castaneæfolia C. A. Mey., Q. Mirbeckii Dr., Q. Ilex L., Q. Ilex var. Ballota*, and *Q. Suber L.*

[245] *adheman*, the hawthorne. This tree is used as a base for grafting pear and apple shoots. Hanoteau and Letourneau give *Crataegus Oxyacantha* (three varieties), *Cr. Azarolus*, and *Cr. monogyna* for Algeria.[4] Laoust identifies *Cr. Oxyacantha* in Morocco.[5]

[262] *asanu*, the arbute, or strawberry tree. Its fruit is eaten fresh, and also dried and put into bread; the wood is used in house construction. Laoust finds it in other parts of Morocco, and gives it the botanical name *Arbutus unedo*.[6]

[262 388] *fathis*, a large tree bearing a small red fruit, which is eaten. The ashes of its wood are mixed with water, in which grapes are washed before being set out to dry. These ashes are also used as soap in washing cloth. Westermarck [7] calls this the lentisk, *Pistacia lentiscus*.

azemmur, the wild olive. Its fruit is not eaten, but its wood is used in making spoons, ploughs, and other objects.

[245] *thazemmurth*, the female of the *azemmur*, smaller than the male. The male can be used for grafting domestic olives, but the female is never used for this purpose.

sa'awis, a large tree with perennial foliage. It bears a seed containing a red liquid. The wood of this tree was formerly used for gunstocks.

thaghieshth n wushun, a species of wild walnut, called jackal-walnut.

afesas, perhaps a spurge-flax, or broom. It is a bush with a red flower, growing in valley bottoms. Laoust gives *Daphne Gnidium L.* for *walesaz*.[8] Hanoteau and Letourneau name three species, *Daphne oleoides Schreb., D. Gnidium L.*, and *D. Laureola L.*, for Algeria.[9] This plant has been mistaken by other botanists for an osier, on account of its extensive use in basketry.[10]

thabgha, a wild blackberry. Justinard affirms this designation.[11]

[1] Justinard, p. 139; Hanoteau and Letourneau, p. 69; el Bekri (tr. Macguckin de Slane), p. 15 n.
[2] Page 117. [3] Page 119. [4] Pages 48, 99. [5] Page 509.
[6] Pages 453–454, 519. [7] Edward Westermarck, *Ritual and Belief in Morocco*, vol. II, p. 185.
[8] Pages 515–516. [9] Page 116. [10] Laoust, pp. 515–516. [11] Page 142.

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ariyeri, the oleander. This plant is important in the manufacture of magical concoctions. Laoust [1] and Justinard [2] support this identification.

tuzalt, a bush resembling a high-bush blueberry. It bears a red pod, like a rose-pod, which is eaten. Laoust [3] calls this *Fraxinus dimorpha*.

aghanim, a reed, used extensively in basket making. Laoust supports this identification.[4]

tharugwith, a bush with a red flower, much frequented by bees.

zui, a bush bearing a white flower, with peppery-tasting leaves. The latter are used as medicine for stomach-ache.

t-knuafer, a bush or low tree which produces a bud resembling a clove. The buds are put into tea as a spice, and are used as a stomach-ache cure for children.

asir, a bush the leaves of which are used in the brewing of a tea alleged to be beneficial in fever.

izarshi, forsythia. Women cut pieces of its stem and tie them in their belts to prevent boils. This identification is purely personal and lacks confirmation.

thakhfa, a wild rose, the pods of which are sometimes eaten in times of famine. Hanoteau and Letourneau [5] give *Rosa sempervirens* for the Kabyle *thaafert*.

Luxurious forests of conifers are said by the inhabitants of the country to have once covered most of the region, but today they are confined to the mountains of Beni Bu Nsar, Taghzuth, Beni Khennus, Beni Seddath, Ktama, Zarket, and the upland reaches of Mtiwa. Patches of this forest remain on Mt. Kuin in Gzennaya, in parts of Beni Amart, at Aswil, where the Nekor passes from the Gzennaya into Beni Urriaghel, and on the crests of Beni Tuzin. The *taidha* grows chiefly in the Senhajan tribes, but the *thuya* is found not only there but also farther to the east, in Gzennaya and Beni Tuzin.

After climbing from the hot barrenness of the eastern Rif, one finds the forests of the Senhaja Sghir most beautiful and satisfying. On the mountain between Beni Bu Nsar and Taghzuth, it is difficult to realise that one is in Morocco. The whole of this section reminds one of temperate forests, such as are found in the northern United States and Canada; especially is this true in the long, flat plateau-valley of Beni Seddath, where a lush meadow is variegated with frequent clumps of *taidha*. Even in midsummer this region retains an exhilarating chilliness of atmosphere. (See plate 1.)

CLIMATE

The slopes of the Mediterranean border of this region are rugged, mostly deforested, hillsides, with a climate similar to northern Mexico or our own Southwest. Farther to the east, in the tribes of Beni Said, Beni Ulishk, Tafersit, and parts of Galiya, the country becomes rolling and its slope relatively gentle, and grain is grown on it without terracing or irrigation. Farther south, however, stretches the arid expanse of the Garet, that waterless waste whereon the Metalsa and Beni Yahyi shift about from camp to camp. This desert stretches into parts of Beni Said and Galiya, and oversteps the boundary of Beni Ulishk and Tafersit. Here in the Garet grows a sparse crop of grass, and quantities of that coarse grass called *halfa*, resembling our own marsh or beach grass, from which the nomadic peoples, and the Gzennaya and other Riffians as well, make sandals, pack-saddles, ropes, and all sorts

[1] Page 484. [2] Page 136. [3] Pages 493, 499.
[4] Page 453. [5] Page 48.

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WOODWORK AND CARPENTRY

322 Woodworking is carried on as a trade throughout the Rif, Senhaja, and Ghomara, and in all of these places is considered a respectable profession, in no way to be confounded with the despised art of iron-forging. Carpenters are naturally most flourishing in the tribes where wood is most abundant, notably the tribes of the Senhaja Sghir, Beni Mesduy, Beni Amart, and Gsennaya. Half the tribesmen of Beni Mesduy are carpenters, and are called out to neighboring tribes, notably to Beni Amart, to ply their trade.

322 412 The tools used by carpenters are as follows:

tharyisinth thumkaren	axe	*er barimith* (Arabic)	awl
tharyisinth n thinjarut	adze	*er ghazarith* (Arabic)	gouge
er minshar (Arabic)	saw	*es siar* (Arabic)	vise
er mithara (Arabic)	plane (see plate 15)	*fukkuth*	pincers
thrima (Spanish, from *lima*)	file	*user*	knife
imithi	chisel	*thimakarath*	scissors
thafaghath	hammer		

The Riffian and Senhajan carpenters use most commonly the axe, adze, and chisel. Planes, awls, vises, gouges, and files are of more recent introduction and hence are used less frequently. Saws are frequently employed, but one may truthfully say that Riffian carpentry is largely dependent upon adze technique. The adze is their tool *par excellence*, and they are extremely skillful in fashioning wooden objects with it.

313 Woodcutters, in felling trees upon the mountains, employ the axe exclusively. Once having felled the tree, they trim it, and, if it is too long to drag down the slope in its entirety, saw it into convenient lengths, unless they intend to use if for a roof-beam. The woodcutter chisels a square hole into the side of the log near the butt end, and with bits of wood wedges a long withe into it. If there are several men available for hauling the log, as many withes are wedged in as there are men. By lifting and dragging they move the log to the edge of the forest, and thence drag it down the slope, often finding it more difficult to keep it from rolling or falling end over end than to keep it moving. Sometimes the log is squared with the adze before being taken from the mountain.

When the woodcutter has succeeded in conveying the log to his house, he sets about preparing it for use. If the log is to be made into planks, he saws it lengthwise, making as many parallel cuts as he can, and carefully leaving the butt end solid — in other words, the planks into which the log has been sawed are still attached at one end. He takes the log, so cut, to market, and breaks off each plank as he sells it. (See plate 15.)

322 In making doors, beams, window frames, and shutters, the planks, whether originally sawed or not, are smoothed and flattened with the adze. So expert are the Riffian carpenters at wielding this tool that they can make a smooth surface on which no lines can be discerned. To leave a line is considered a sign of poor workmanship. With the adze they fashion wooden spoons, smooth, delicate, and graceful, and with the same tool a heavier implement, the plough.

MANUFACTURE OF TAR

314 Among the tribes in which the conifer *takka* is found, the manufacture of tar is carried on as a common occupation by woodcutters. These craftsmen fell the trees and cut up and chip sections of the trunks into small pieces. They then dig a hole in the ground, setting in

1: Coon E-5 (1926-1927) 1931 MX3 Rif MX3

314 it a large earthen pot or other vessel. Over this they place a perforated plate like a *seksu* dish, and over that the *takka* wood, shielded from the fire by an inverted vessel. Over all a pile of brush is heaped, and this covered with dirt, except for an ignition hole. The fire is then lighted, and smoulders for days. When it has finally died down, the woodcutters extract the tar from the lowest pot.[1]

Tar is called *jathukh*. It is the only product made from the sap of the pine, since turpentine and resin are alike unknown to the Riffians. It is found in Beni Bu Nsar, Beni Seddath, Beni Khennus, Ktama, Taghruth, Beni Bu Shibet, Beni Hamid, Zarket, Beni Beshir, Beni Amart, Mountain Urriaghel, Iherrushen, Ikhuanen, Temjunt, Bured, and Beni Mesduy.

HOUSE TYPES

342 **Sedentary Habitations.** The tribesmen of the Rif, Senhaja, and Ghomara occupy permanent houses, square in room-unit form, and usually built, when there are more rooms than one, about a hollow square serving as courtyard. The house, *theddath*, is generally of stone masonry with a roof of clay, thatch, or shingles. The component elements are as follows:

azkak, the courtyard.

afshthair, the low or sunken area at one end of the nuclear room, used by the family cow.

thisi, the middle area in which the family lives.

arfith, a raised platform at the end of the room opposite to the *afshthair*. This platform is slept on by the family.

thighagha, a rude firehole, hedged with stones, and set in the middle of the floor, usually in line with the door. There is no chimney, except in rare cases where a broken pot is set into the roof, and ordinarily the smoke finds its own way out of the room.

arof, a wooden loft built over the cattle-pit. This loft, made of rafters covered with loose, unnailed planks, and supported by a post from beneath, is used mainly for storage of firewood. In the Beni Bu Nsar, the *arof* is made to project through the wall under the roof, which likewise projects, forming a covered-in second-story piazza, often slept on in summer. It is sometimes supported by posts, the village street passing under it. (See plate 18.)

sijum (Arabic *silum*), the notched pole which holds up the *arof* and delimits the edge of the cattle-pit. The notches in this pole serve as ladder rungs for mounting the *arof*.

a'atab, the wooden lintel over the door.

thaworth, the door, made of two or more adze-flattened pieces of wood, with projections left at either end on one side, to fit into the lintel above and the ground below and serve as hinges. There is no lock, no latch, and rarely a handle.

thabuarjth, the window, a square opening of small size in the wall. There is seldom more than one window to a room.

thaworth n thabuarjth, the shutter. When a window is larger than a mere peep-hole, it is entitled to and receives a shutter — merely a miniature door, kept closed most of the time.

thuzukha, the roof, the component elements of which will be discussed separately.

sethur, the ridgepole, generally a single log, either left rough or hewn into hexagonal shape with the adze. Sometimes, with the aid of a pillar, the ridgepole may be composed of two logs laid end to end.

[1] A more complicated method of tar distillation, used in the South Algerian oasis of Tidikelt, has been described by L. Voinot in *Le Tidikelt*, pp. 142–143.

1: Coon E-5 (1926-1927) 1931 MX3 Rif MX3

of the bottom piece, set on edge. She does not coil it up over itself, but cuts it off, at the proper length, presses the ends together, and adds another strip to the top. When the pot has reached the required height she shapes it by means of a stick held inside and out, and by manipulation with her fingers. Handles and spouts are made separately and put on after the shaping has been finished. 323

The pot is then fired; while this is going on the women crush the ripe leaves of a wild bush called *bu b'kennin*, which resembles dogwood. From the leaves exudes a watery yellow juice. When they have taken out the pots, they paint them, still hot, with this juice, applying it with a stick, bit of straw, or rag, in geometric design, yellow on the buff of the clay. They then replace the pot in the kiln and rebake it. When it is taken out for the second time the design is black on buff, and gradually fades to sepia on buff. This pottery is found in Beni Urriaghel, Gsennaya, Beni Amart, Eastern Arabophone Senhaja, and Beni Mesduy. (See plates 23 and 24.) 1386 3141

The wheel-made pottery manufactured by other tribes resembles the Arab pottery found all over the Arabic-speaking portions of Morocco, both in technique of manufacture and in shape. The vessels are generally cylindrical in form and white in color, without a slip; the wheel striations are plainly visible. Design is limited to a few squiggly lines running down the sides from the brim as the result of the fusion of a pigment put on the brim before firing. Distribution is in Ghomara, Western Arabophone Senhaja, Ktama, the Maritime tribes, Bokoya, Targuist, Temsaman, Beni Tuzin, Metalsa, Beni Said, Galiya, and Kebdana.

The shapely designs of the central Riffian ware, two-handled drinking pots with down-curving lips, shallow plates, spouted milk-jugs, and semi-globular bowls, are copied on the wheel in certain tribes adjacent to the central Riffian area. The design typical of the Rif is put on, a little too perfectly to be true, and the product sold in markets as Riffian pottery. This hybrid type is made, not as a survival of Riffian design in an area of recent adoption of the wheel, but as a definite attempt to imitate and to defraud. The wheel is reputed to have been used in the regions where it is now employed from the most remote times, and the diffusionistic tendency has been against rather than for its dissemination. Wheels have been abandoned in Targuist in favor of the cruder technique, and the same tendency is evident in Bokoya, Beni Tuzin, and Temsaman. Distribution: Bokoya, Tuzin, and Temsaman. 323 415

WOOD, SKIN, AND IRON CONTAINERS

Throughout the Rif wooden bowls are adzed out of tree-trunks. These bowls are of one piece, and round in shape. Another type of wooden container, used in serving *seksu* to a large company, is the same as an old-fashioned washtub, shaped like the bottom part of a barrel, and carried about by means of chain handles. Wooden containers, carved from one piece or put together in the manner of barrels, are the characteristic product of the tribes of the Senhaja Sghir, with the exception of Ktama. These tribes make no pottery, and have a greater abundance of wood than any other group. They utilise wooden vessels for every purpose which does not necessitate the use of fire. For the latter purpose they import pottery vessels from the Rif; but they have in recent years produced an undecorated imitation of them in Taghzuth. 415 322

Although the Metalsa make wheel-turned pottery, their equally nomadic neighbors, the Beni Bu Yahyi, neither make it nor employ it to any great extent. The Beni Bu Yahyi use 415

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for the most part containers of iron and of skin, materials which are not apt to break in the course of a nomadic existence. Skins are used to hold all liquids, and likewise as churns for butter.

BASKETRY

There are three types of basket-making employed in the Rif; coiling, twilling, and wickerwork.

Coil-baskets are made with a bundle of *azref*, a grass, circular in section, as rod, and with palmetto leaves for wrapper. Coiled baskets, generally in the form of shallow trays, called

MAP 8

tubbut, are supposed to have been introduced by the Arabs. They are found in Ghomara, Mestassa, Beni Bu Frah, Beni Itteft, Bokoya, Ajdir, Branes, Ktama, Targuist; Khebaba, Shawia, and Beni Yunes of Gaennaya; Temsaman, except for the villages near the sea; Beni Said, with the same exception; Galiya, Kebdana, el Azib of Meidhar, Tafersit, lowland Beni Ulishk, Metalsa, and Beni Bu Yahyi.

Twilling, called *iji*, is employed in the manufacture of the *shuari*, or pack-saddle panier, and of the *endu* or flat basket with two handles used as a container of dried figs and raisins, also as a table upon which bowls are set and upon which bread rests during repasts. These articles are made from either *halfa* or palmetto, whichever is available. They are distributed through Beni Mohammed, Shawia, Ulad Alu Fars, Khebaba, Iharshliyen, and Ain el

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285 415 Hamara of the Gzennaya; Bokoya; Ijaonen of Beni Amart; Beni Hadifa and Ajdir of Beni Urriaghel; Sidi Bu Daud of Temsaman; the Metalsa dwelling near Beni Mohammed, Beni Ulishk, Tafersit, all the Senhaja and Ghomara, Beni Mesduy, Targuist, and the western Maritime tribes.

[314] *Wickerwork*, the third type, is called *asarow n ughanim*. Oleander switches and reeds are used, the oleander for the uprights, or warp, and the split reeds woven in and out between them. Baskets made of this material are often of great size, four to five feet in diameter and six feet in height. They are used for the transportation of grapes, figs, almonds, walnuts, and the like, and for the storage of raisins, dried figs, and dried apricots. (See plate 24.) They are to be found in Iherrassen, Ikhuanen, Ulad Alu ben Aissa, Ikaroen, Temjunt, Bured, all of Gzennaya, Mountain Urriaghel, Taghzuth n Tassa and Tizera n Imziwen of Beni Tuzin, Beni Amart, Bu Adl, Beni Koraa, and Ain Mediuna of the Eastern Arabophone Senhaja, and Beni Bu Shibet.

TEXTILES

286 [439] Textiles made in the Rif are confined to woolen cloths, all cotton and what little silk there is being imported.

283 [824] The first process in textile manufacture is washing the wool in a stream with the boiled roots of the plant known as *thaghigheshth*. The wool is hung up in the rafters of the house until dry, and is then carded. In the old days, cards of local manufacture, called *ikarthashen*, were employed, but today the cards used throughout the Rif are imported from Sheshawen and are of European type. The indigenous type consists of a long wooden handle about two feet in length, with a flat piece of cow's horn attached to one end. Into the horn are set two parallel rows of spikes, either wooden or brass, about the length of a human finger. The rows are set at right angles to the axis of the handle, and the spikes project from the handle at a right angle. These cards were kept in pairs, and when not in use were pushed up into the rafters, where, in old houses, a few of them may still be found.

Spinning, the next process after carding, is done in two ways:

1. The thread is suspended from a distaff, on which the rove is wound, and attached to a spindle-whorl held just off the ground. Thread spun in this way is used for warp and is called *asarau*.

2. The rove is spun on the thigh and gathered into a pot below. This thread is used for weft and is called *amshin*.

286 [869] Weaving, the final process of textile manufacture, is done on two entirely different kinds of loom under different circumstances. The more primitive is the *azta*, an upright two-bar loom with a stick heddle and a wooden comb for battening the warp. The operation of the *azta* is entirely in the hands of women. A girl who does not know how to weave on the *azta* has a poor chance of marriage, and consequently girls learn this art at an early age. Parties are held for the teaching of it; a girl who is not expert invites a number of skilled weavers, who go to her house, eat, and instruct her. The cloth produced by the *azta* is called *tadsha* and is used for women's clothes, men's sleeveless shirts worn in winter, and blankets. It is generally white, sometimes with red horizontal bands or stripes. The *azta* is employed throughout the region under consideration, except in the tribes of Beni Bu Yahyi and Metalsa.

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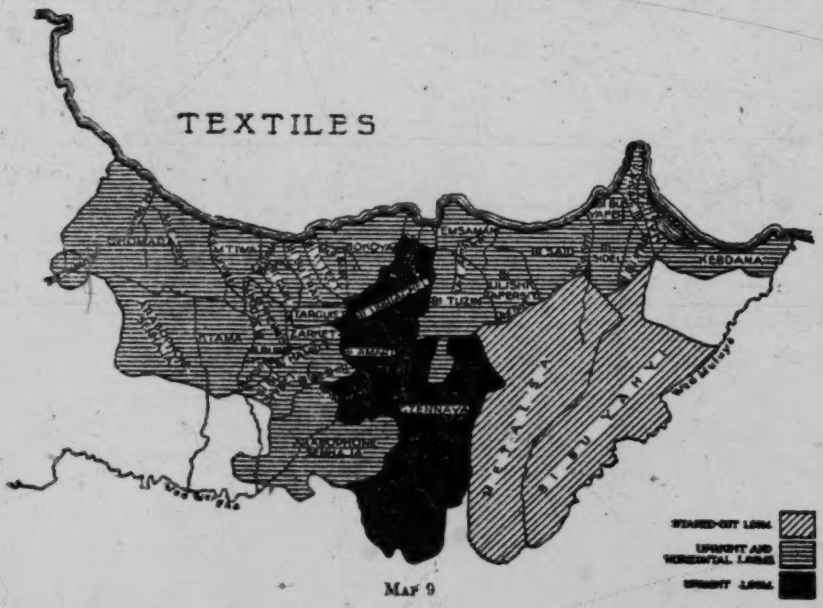
286 The second and more advanced type of loom, called *marmath*, is a horizontal extended mechanism of complicated design, with looped-wire heddles operated by a foot-treadle, a shuttle, and a two-bar wire batten suspended from above. With this machine the weaver, who is always a man, can turn out in a reasonable time a first-class piece of homespun cloth comparable to that produced on Scotch or American hand-looms. The cloth woven in this fashion is generally dark brown or black in color, the black cloth being highly valued and made without dyeing from the wool of black sheep. The thread spun for the *marmath* is finer than that prepared for the *azta*. The *marmath* is used in Sheshawen, all the Eastern



MAP 9

Arabophone Senhaja but Marnissa and Branes, all Western Arabophone Senhaja and the Senhaja Sghir, the Ghomara, Targuist, the Maritime tribes, Beni Ulishk, Tafersit, Temsaman, Beni Said, Bokoya, Beni Tuzin, Galiya, and Kebdana. The tribes which have none are Beni Amart, Marnissa, Branes, Gzennaya excepting Beni Yunes, Urriaghel excepting Ajdir, and Beni Mesduy. The use of the *marmath* seems to have spread from Sheshawen as a western center, only Ulad Azam of the Eastern Arabophone Senhaja having employed it in earlier times. Its use in the east may have spread from Melilla or Algeria.

A third type of textile manufacture is found among the nomadic Beni Bu Yahyi and Metalsa, who employ neither the *azta* nor the *marmath*. These people make long braids of *halfa* grass, and stretch them out on the ground, tied to iron stakes, in the form of a very long, somewhat narrow, loom. The *halfa* braids form the warp, and a coarse thick thread

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286 spun from black goat hair is put in as a weft by hand, without a shuttle, as in the case of the *azta*. The result of this process, a heavy, hybrid fabric, half textile and half matting, is used for tents.

Rug-making has not reached the high development among the Riffians which it has attained among the Shluh and Braber. Riffian rugs, woven on the *azta*, are coarse, harsh, and unattractive. The hooked-rug method, employed so effectively by the Beni Mgil and Beni Mtir of the Braber, is unknown. In fact, few rugs are made by the Riffians, who prefer to purchase them at Melilla and Fez.

386 All wool intended to be used in garments other than turbans and belts is thrown into a vat of dye before being carded or spun. The dyes used for coloring this raw wool are as ●314 follows:

brown, made from boiled apple-leaves.
red, made from the bark of almond-tree roots, boiled.
yellow, made from pomegranate husks.
green, made from the water boiled out of *thaghigheshth* roots or cedar cones.
black, made from an imported mineral called *zaj*.

386 These natural vegetable products are boiled in water, in which the wool is immersed and soaked. When it is taken out the colors are fast. Turbans and belts are dyed after they have been finished, when taken out of the dye they are rubbed with ashes, a process not considered necessary in the case of raw wool. Leather is dyed by exactly the same process as wool.

Tie-dyeing, called *thisfarsth*, is in some regions applied to cloth intended for use as turbans. The distribution is as follows: all Senhaja and Ghomara, and all tribes between them and Tangier.

CLOTHING

291 Riffian clothing was formerly made entirely of wool, locally sheared, spun, and woven.
177 At present many garments are made of imported cotton cloth, and others of silk. In this compilation of garment-types most attention will be paid to the older elements of Riffian dress, the distribution of which alone is significant.

Masculine Attire. *ajjab*, the jellaba, is a woolen cloak with short sleeves and a hood.
[171] The jellaba is found all over North Africa and is not a distinctive Riffian garment, except as it differs in minor details from jellabas worn by other Berber or Arab groups. The Riffian jellaba is notably shorter than the average, reaching only to the knees, and its hood less broad than the hoods of the Ghomara and other western groups. The Riffian jellaba has definite shoulders; in the western type the transition from hood to sleeve is lacking. The Riffian jellaba is always either dark brown or black, but in other areas white, striped, or other colored types are worn. Furthermore, the Riffian jellaba can be readily distinguished by its embroidery, which will be treated separately. The jellaba is exclusivley a masculine garment. (See plates 25 and 27.)

er serham, the silham, is a cloak resembling the jellaba, but lacks sleeves and is generally
[171] much longer and more flowing. The silham is typical of the Braber and Shluh of the Atlas, and is likewise worn by the nomadic peoples south of the Atlas. In the Rif its use is limited to the nomadic tribes of the Garet. Until recently the silham was worn by both the Metalsa

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delta, but it becomes progressively rarer toward the eastern semiarid sector of this zone. Pistacia wood is highly prized as a source of charcoal, and this fact alone may explain the plant's degraded appearance in the hills south of Tangier.

Pistacia rarely forms a pure stand. Several of the other plants found in palmetto scrub could be described as weeds, for they appear mainly in fallow fields. *Asphodelus microcarpus, Urginea maritima, Daphne Gnidium,* and one or more species of *Asparagus, Ononis,* and *Papaver* are prominent among them. In areas where most of the surface is cultivated, as in the Fahs territory south of Tangier, these plants, together with thistles and scattered clumps of palmetto, constitute all but a small part of the total inventory of vegetation. On rocky knolls and alluvial slopes too steep for cultivation, these plants grow among *Pistacia, Calycotome, Lavandula,* and the oleaster. The percentage of thorny plants is high. Besides *Calycotome* and thistles, *Carduus, Smilax,* and *Rosa* are found.

Dense shrub formations are rarely seen on the thickly settled Atlantic versant. One may walk unimpeded anywhere in the zone bounded by the Atlantic coast, Tangier, and Ksar al-Kebir. The thick shrub growth on the Mediterranean coast near Wad Lao contrasts sharply with the open formations on the Atlantic littoral. In the former area, *Cistus ladaniferus, C. albidus, Erica arborea, Pistacia lentiscus,* and *Arbutus Unedo* combine to form an impenetrable thicket. The limestone mountains of northern Morocco are almost bare of shrub or tree growth. From Ceuta to Wad Lao the eastern horizon is dominated by a great wall of limestone, almost completely devoid of soil. The prevalent whiteness is disturbed only by scattered clumps of palmetto and spiny gorse (*Ulex parviflorus*).

In the area covered by palmetto scrub the persistent riparian plant is the toxic *Nerium oleander.* It may be accompanied by *Crataegus, Myrtus,* and *Arbutus,* but in most of northwestern Morocco the oleander is the only plant on the banks of streams. The presence of *Alnus, Populus, Salix,* and *Vitex* along stream channels in the Sanhajan highlands may be explained by the persistence in that area of other trees, especially cedar, juniper, and oak, which have been adequate thus far as a source of fuel and building material.

In the drier eastern sector of northern Morocco, palmetto scrub grades into a thorn scrub dominated by *Zizyphus lotus,* a spiny and xerophytic member of the buckthorn family (Rhamnaceae). It is difficult to draw a line between these two formations. Isolated clumps of palmetto are found as far east as the Moulouya Valley, and zizyphus extends up the valley of Wad Ghis as far as Targist.

Well adapted to aridity and continentality, *Zizyphus lotus* has become the dominant plant of Morocco's semiarid plains. Clumps of zizyphus are conspicuous within most of the area mapped as thorn scrub. This plant may grow three meters high, but is most often seen as a shrub. It is deciduous; and, during the dormant winter season, gray and seemingly lifeless clumps of zizyphus are a characteristic feature of the landscape. Its branches are widely used as fence material, and this practice enhances the contrast between the semiarid sector of northern Morocco and the wetter western zone, where *Opuntia* is planted as a hedge. The fleshy drupe of zizyphus is collected wherever it grows; when cereal stocks are exhausted, "lotus bread" is an important food.[a]

[a] *Zizyphus lotus* is occasionally planted in Andalusia, Portugal, and Sicily, but in northern Africa the fruit is collected from wild plants. Aug. Chevalier, "Les jujubiers ou zizyphus de

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by burning, may completely destroy the oaks. The Mamora cork forest north of Rabat (137,000 hectares) is the largest in the world.[a] Cork oak covers about 100,000 hectares in the northern zone.[b]

Much of the economic activity in northern Morocco is concerned with the collection and shipment of cork. The bark of the trunk and the larger branches is utilized. Cork is first removed when trees are about twenty years old, with subsequent stripping every seven to ten years. The first yield (*liège mâle*) is very rough and coarse and of little value. Cork of subsequent stripping (*liège de reproduction*) is more homogeneous and of higher commercial value. In northern Morocco, cork is collected by Spanish concerns with native labor, and also by small independent operators who collect cork from isolated villages and carry it to places of deposit on the main roads. Most of the cork from northern Morocco is shipped in bulk to Spain.

Deciduous oaks cover about 7,000 hectares in northern Morocco. Two species are represented, and they have the scattered distribution characteristic of relicts. The larger stand of deciduous oaks grows at an elevation of about 1,000 meters in the mountains west of Shawen and southwest of Bab Taza—Jbil Buhashim, Jbil Sugna, and Jbil Hazana. *Quercus pyrenaica* = *Q. Tozae* is the species in this area; it appears also at elevations of 1,200–2,000 meters on Jbil Tiziran and, as the binomial indicates, in the Pyrenees. The second species, *Q. faginea* = *Q. lusitanica*, is scattered over the Sanhajan highlands. The largest stands are on the slopes between Jbil Tiziran and Jbil Leshab. Other stands appear on the slopes of Adrar Tidighin and Adrar Taghzut, and there are a few trees mixed with *Erica arborea*, *Cistus ladaniferus*, and *Pistacia lentiscus* in the maqui near Tangier.

It is difficult to explain the scattered distribution of the deciduous oaks. They are abundant in the largest forested area (fig. 8), that of the mountains west of Shawen, but many of the trees in this forest were cut by the Spanish for use as railroad ties. Both species seem to be calcifuge, and it is unlikely that either will be found in the drier parts of the zone. The scattered and mountainous distribution suggests that the deciduous oaks are Pleistocene relicts now restricted to the coolest and wettest parts of northern Morocco. The extreme polymorphism of *Quercus faginea*, with its great number of subspecies and races, seems to support this view.

The highest peaks in northern Morocco are clothed with forests of fir and cedar. The former genus is confined to the calcareous mountains east of Shawen. Two species are present: *Abies tazaotana* occurs at elevations of 1,500–1,854 meters on Jbil Tazaot, and *A. pinsapo* appears on Jbil Maggo, Jbil Tisuka, and Jbil Leshab, as well as in the mountains near Ronda in southern Spain. This restricted highland distribution again suggests that these species are relicts. On Jbil Tisuka and Jbil Leshab, forests of fir begin at an elevation of 1,600

[a] Estimate of Emberger, *Aperçu général sur la végétation du Maroc*, p. 101. For an excellent description of the Mamora forest see A. Métro and Ch. Sauvage, *Flore des végétaux ligneux de la Mamora* (Rabat: Société des Sciences Naturelles et Physiques du Maroc, 1955).

[b] This figure and the estimates of forested surface in later paragraphs are taken from S. Sánchez Cózar, "Montes," *Conferencias desarrolladas en la Academia de Interventores durante el curso de 1947* (Tetuán: Imprenta del Majzen, 1948), pp. 5–25. Earlier estimates appear in E. González Vázquez, *El Marruecos forestal* (Madrid: Ediciones Técnicas, 1945).

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137 by cutting, browsing, or fire. This ability explains the presence of scrub thuya in deforested areas. But it grows slowly and is sensitive to disturbance in its early years. In the area delimited on the map, thuyas are widely scattered and for the most part badly mutilated. Large formations have been completely [313] destroyed. More than half of the houses in the eastern part of the Rif have [314] rafters of thuya, which is used, wherever it grows, as a source of charcoal. The Barbary thuya has been used for centuries in making cabinets and other furni- [322] ture, and was esteemed by the Romans for roofing temples.[a] Damaged trunks sometimes develop giant burls, which have been used since classical time as table [314] tops. A hard resin, sandarac, exudes from the trunks, and a modest quantity [439] of it is shipped to Britain, where it is used in the manufacture of varnish.[b]

[a] Pliny, *Natural History*, XVI, 231, XXXIII, 146.

[113] [b] W. Dallimore and A. Bruce Jackson, *A Handbook of Coniferae* (London: Edward Arnold, 1948), p. 610.

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seldom seen except in the European quarters of the larger towns. When a feast is in prospect, food is sometimes boiled in earthen pots set about an open fire. Wood fires also heat bake ovens. But most if not all Moroccan cooking is done over a charcoal brazier, consisting of an iron pot and tripod or simply an old gasoline tin. The brazier is used several times a day to boil water for tea; indeed, more fuel is consumed in this process than in cooking. Blacksmiths and other craftsmen rely upon charcoal, and lime kilns are found near every town.

Charcoal is a valuable fuel, for it has about twice the heating power of wood and burns without flame or smoke. In Morocco wood is converted to charcoal in shallow pits thinly covered with earth. But this process of partial combustion is extremely wasteful, since much of the volatile material in the wood is lost. The best charcoal is obtained from the denser hardwoods, especially the oaks. *Quercus Ilex* is the preferred wood, and this preference helps to explain the degraded aspect of most stands of this tree. The cork oak, the kermes oak, the oleaster, *Pistacia lentiscus, Rhus pentaphylla,* and *Arbutus Unedo* also yield excellent charcoal. Where the choice of wood is limited, many shrubs are utilized, and all available trees. No reliable estimate of the amount of charcoal annually consumed in northern Morocco has ever been published, but it must be enormous, for a charcoal brazier of some sort burns in every home.[84] During any day of the year, women and animals may be seen carrying loads of wood or charcoal to the cities and towns (pl. 8, *b*).

Mud brick or stone usually forms the walls of houses, but wood is always required for the rafters. In the deforested eastern sector, houses are built long and narrow so that branches and twigs can be used as a covering. When available, slender riparian or coniferous trees are used as rafters, but in most of northern Morocco such trees cannot be obtained.

Riparian forests are rare today apart from some canyons in the mountains, where the remaining stands of *Salix, Alnus, Populus, Vitex,* and *Crataegus* become thinner each year. *Nerium oleander,* the riparian "tree" of the hills and plains, is of little value in construction, and the oleaster and oaks are usually too massive or knarred.

The common type of house in Gal'aya and the Rif is well adapted to an environment poor in timber. In the Rifian dialect the word for "sloping roof" (*thazukha*) is the general word for all roofs, whereas a special word (*asthih*) is used for the now prevalent flat roofs.[85] The fact that the generalized word for roof is the same as that for a sloping one indicates greater antiquity for the latter variety. There is evidence that flat and narrow houses of the eastern type have recently replaced dwellings demanding more wood along the entire western frontier of the Rif.[86]

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most of this production has been consumed by factories in the Casablanca district and by the railroads of northern Africa. Fernand Joly *et al., Géographie du Maroc* (Paris: Delagrave, 1949), pp. 135–136.

[84] The estimate of "four to five metric tons" published by the Spanish forestry service takes account only of commercial operations. E. González Vázquez, *El Marruecos forestal* (Madrid: Ediciones Técnicas, 1945), p. 72.

[85] C. S. Coon, "Tribes of the Rif," *Harvard African Studies,* 9 (1931), 69.

[86] Coon, *loc. cit.*, traces this change to the burning of houses during feuds in the pre-protectorate period, and to the fact that many families found it difficult to obtain lumber after the end of Abd al-Krim's rebellion. For evidence of changes in recent years, compare his map of house types (p. 71) with fig. 15 of the present study.

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313 The great wooden gates that used to guard the openings of every city wall
648 demonstrate the importance of the lumber trade. Only fragments of these gates
171 still exist, but it is certain that most of them were made of cedar. Logging operations were greatly expanded by the Spanish after the Rifian tribes had been pacified. It is not an exaggeration to say that the mineral deposits and cedar forests of northern Morocco were the only compensations for Spain's investment in colonial prestige. Reliable estimates of the amount of timber cut since the beginning of the protectorate cannot be found, possibly because the Spanish claimed to be conserving and restoring the forests in their zone. With the backing of military force, the Spanish were able to exercise some control over cutting by the native population, but their own work proceeded without interruption or apparent regulation. Spanish officials point out that the forests being exploited were private property and that the forestry service was concerned only with public domain.

In 1956 sawmills operated throughout the year at Tetuán and Targist, and during the summer months trucks heavily loaded with cedar logs could be seen on every mountain road. The fir forests on Jbil Tisuka and Jbil Leshab had not yet been heavily logged when Spanish "protection" came to an end, but the deciduous oaks on Jbil Buhashim had been cut in quantity for use as railroad ties. These operations may have been a brief chapter in the history of the Moroccan forest, but it is probable that the Spanish, with modern equipment, cut more trees in a decade than the local tribesmen could destroy in a century. The effects of Spanish logging are strikingly evident in the Sanhajan highlands, especially on Adrar Dahdoh, Adrar Tidighin, and Adrar Tizi Ifri.

313 This harsh judgment applies only to the exploitation of cedar and the decidu-
171 ous oaks. A modest amount of reforestation was undertaken. A plantation of
[185] *Eucalyptus* was established north of Larache; Aleppo pines were planted near Rinecón, Alhucemas, Nador, and Melilla; and an effort was made to prevent premature stripping of the cork oak.[a]

Profiting from long experience in Algeria, the Service des Eaux et Forêts carried out an elaborate program in French Morocco. The system advocated and partly enforced was based upon periodic and progressive thinnings, which were intended to reconcile the interests of the tribesmen with good forestry practice. If effectively enforced, this method would have permitted the production of fuel without waiting for the normal age of exploitation, and would have improved pastoral conditions by facilitating the movement and supervision of livestock.[b]

314 Tannin is extracted from the roots and bark of all the Moroccan oaks, and
171 this operation frequently results in mutilation or death. The cork oak is espe-
311 cially vulnerable, for tannin is scraped from the delicate inner bark immediately after the corky tissue has been removed. Complete girdling destroys trees, and death may result if more than half of the circumference is damaged.[c] The tanners of Marrakech have been responsible for extensive deforestation in the

[a] The program planned by the Spanish forestry service is described in González Vázquez, [113] *op. cit.*, pp. 97–185, cited in note 34; and J. Ruiz de la Torre, *La vegetación natural del norte de Marruecos y la elección de especies para su repoblación forestal* (Larache: Centro de Investigaciones Forestales, 1956).

[b] For a brief account of French management, see J. P. Challot, "L'homme et la forêt maro- [113] caine," *Rev. des Eaux et Forêts*, 84 (1946), 233–261.

[c] Boudy, *op. cit.*, II (fasc. 1), 47 ff., cited in note 5.

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High Atlas. Deforestation can be traced also to the tanners of Fez and Tetuán.[112] The tanners' guild in Fez goes back to the ninth century, when master tanners gathered at this site from Córdoba, Qayrawan, and distant Iran. Fez leather was once exported as far away as Baghdad, and shoes went to Egypt until the present century. During the peak years of production. Fez craftsmen tanned about 500,000 skins a year. The descendants of the original immigrant craftsmen are still busy making handbags, slippers, and other articles for the tourist and export trade.

It is not surprising that *Quercus Ilex,* an important source of tannin, should now be rare in the hills near Fez and Tetuán. There is good reason to believe that the holly oak once covered these hills. One well-informed botanist asserts that the primordial cover of the limestone mountains south of Tetuán probably was a "climax" forest of holly oak.[113] In Gal'aya and the eastern Rif, careless stripping of the bark of *Rhus pentaphylla,* a source of red dye, destroys many trees; "Morocco leather," a trade name in bookbinding, is customarily made from goatskin tanned with sumac.

Effects of Burning

In the eastern Rif the plant cover is usually too sparse to maintain a fire, and on the Atlantic littoral there is little land left to clear. But between these areas is a large zone covered with forest or scrub that must be burned before the land can be plowed. Some attempt is usually made to control the spread of fire, but conflagrations develop when tinder-dry shrubs are fanned by brisk winds. Fire is employed also for the "improvement" of pasture, for increased blossoming ("bee pasture"), and probably for the mere pleasure of burning or out of carelessness.[114]

The importance of pastoral fires has been emphasized by most students of the Mediterranean landscape,[115] but in northern Morocco fires set to clear away noxious shrubbery or to facilitate movement of stock are less important than agricultural fires. Pastoral fires are neither necessary nor desirable where there are goats, for these animals thrive on woody browse and can break through the thickest scrub. Sheep outnumber goats only in the drier eastern sector, where impenetrable formations are rare. For every fire set to "improve" pasture, probably more than ten are set to prepare new fields for plowing.

Whatever its cause, fire is a major agent of deforestation. The difficulty is that there are many kinds of fires: quick fires that run over a thin mantle of vegetation, great conflagrations that consume thicker formations, fires that remain close to the ground, fires that extend to the crowns of trees. It makes a great deal of difference whether fires recur after five or after twenty-five years. Moreover, the important factor may be not the fire itself but what happens to an area after it has been burned.

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[112] R. le Tourneau, L. Paye, and R. Guyot, "La corporation des tanneurs et l'industrie de la tannerie à Fès," *Hespéris,* 21 (1935), 167–240; A. Joly, "L'industrie à Tétouan," *Archives Marocaines,* 8, 15, 18 (1906–1912).

[113] J. Ruiz de la Torre, *El matorral en Yebala (Marruecos español)* (Madrid: Instituto de Estudios Africanos, 1955), pp. 26–27, and the map showing the "natural area" of *Quercus Ilex.* H. Marc, *Notes sur les forêts de l'Algérie* (Paris: Larose, 1930), p. 396, lists the causes of serious forest fires from 1886 to 1915 as "accidents" (8 per cent), "imprudence" (32 per cent), "intentional" (23 per cent), "unknown" (37 per cent).

[114] G. Kuhnholtz-Lordat, "Influence des feux pastoraux dans la région méditerranéenne," *Jour. d'Agriculture Tropicale et de Botanique Appliquée,* 3 (1956), 785–791.